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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,220	10/26/2005	R .Rogers Yocum	BGI-154US2	2729

959 7590 06/09/2010

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EXAMINER	
FRONDA, CHRISTIAN L	
ART UNIT	**PAPER NUMBER**
1652	

MAIL DATE	DELIVERY MODE
06/09/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/520,220	YOCUM ET AL.	
	Examiner	Art Unit	
	CHRISTIAN L. FRONDA	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-15,23,28,31-33 and 50-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-15,23,28,31-33 and 50-65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 2-15, 23, 28, 31-33, and 50-65 are under consideration in this Office Action.

Claim Rejections - 35 U.S.C. § 112, 1st Paragraph

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 2-15, 23, 28, 31-33, and 50-65 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a process for the production of pantothenate comprising culturing a *Bacillus subtilis* host cell transformed with the plasmid pAN396 containing the glyA gene consisting of SEQ ID NO: 24 and the plasmid pAN824 containing the serA gene consisting of SEQ ID NO: 31; does not reasonably provide enablement for any other embodiment as recited in the claims. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. The arguments filed 03/01/2010 have been fully considered but are not persuasive for reasons of record as supplemented below.

While the references of Collett et al., Ho et al., Vatcher et al., and Achouri et al. teach the human L-3 phosphoserine phosphatase, plastidic phosphoserine aminotransferase, serine hydroxymethyltransferase, and rat liver 3-phosphoglycerate, respectively, the references do not provide guidance, prediction, and working examples for making the scope of the entire invention as claimed. Deregulating including overexpressing any of the genes encoding enzymes and/or proteins of pantothenate biosynthetic pathway and overexpressing any of the genes encoding enzymes and/or proteins of methylenetetrahydrofolate (MTF) biosynthetic pathway in the recited microorganism will involve manipulating any of the numerous genes encoding any and all enzymes and/or proteins of associated with any of the entire metabolic pathways in these organisms. This requires knowledge of pantothenate biosynthetic genes including a ketopantoate

hydroxymethyltransferase (panB), a ketopantoate reductase (panE), a pantothenate synthetase (panC) and an aspartate-α-decarboxylase (panD); isoleucine-valine (ilv) biosynthetic pathway genes (which includes any of ivlA, ivlB, ivlC and/or ivlD genes); MTF biosynthetic genes including glyA and serA many of which have not been discovered; further knowledge of genes regulating pantothenate kinase from any source or manipulating the kinase activity by deleting CoaA and down-regulating CoaX activity or wherein the pantothenate kinase activity is decreased by deleting CoaX and downregulating CoaA activity and associated protein and/or enzymes involved in regulation of these pathways, wherein the genes in question originate from any source and will involve undue experimentation given only the working example for a process for production of pantothenate comprising culturing a *Bacillus subtilis* host cell transformed with the plasmid pAN396 containing the glyA gene consisting of SEQ ID NO: 24 and the plasmid pAN824 containing the serA gene consisting of SEQ ID NO: 31. Mere knowledge of the biochemical or metabolic pathways leading to the production a compound is not sufficient to over-express any of the genes associated with the pathway(s). According to MPEP §2111, claims must be given their broadest reasonable interpretation consistent with the specification and that such interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. The claims of the instant invention must be read in light of the specification to thereby interpret limitations explicitly recited in the claims. Thus, limitations of the specification cannot be read into the claims to narrow the scope of the claims by implicitly adding disclosed limitations which are not recited in the claims. The instant specification only provides enablement for a process for production of pantothenate comprising culturing a *Bacillus subtilis* host cell transformed with the plasmid pAN396 containing the glyA gene consisting of SEQ ID NO: 24 and the plasmid pAN824 containing the serA gene consisting of SEQ ID NO: 31.

The previous rejection of record is reproduced below.

The nature and breadth of the amended claims encompass any processes for the enhanced production of pantothenate comprising culturing microorganisms including *Bacillus, Corynebacterium, Lactobacillus, Streptomyces, Salmonella, Escherichia, Klebsiella, Serratia, Proteus and Saccharomyces* having any deregulated enzymes and/or proteins of the MTF

biosynthetic pathway and any deregulated of enzymes and/or proteins of the pantothenate biosynthetic pathway under conditions such that pantothenate production is enhanced as compared to a wild-type microorganism, wherein deregulation of the MTF biosynthetic pathway is achieved by deregulating the gene product of *gcv, sera, serC, serB, glyA, sul, fol, mtrA, pag, panB* or *purR* derived from a microorganism of the genus *Bacillus, Corynebacterium, Lactobacillus, Lactococci,* or *Streptomyces*.

As previously stated, the specification provides guidance, prediction, and working examples for a process for production of pantothenate comprising culturing a *Bacillus subtilis* host cell transformed with the plasmid pAN396 containing the glyA gene consisting of SEQ ID NO: 24 and the plasmid pAN824 containing the serA gene consisting of SEQ ID NO: 31.

The specification, however, does not provide guidance, prediction, and working examples for making the scope of the entire invention as claimed. Deregulating including overexpressing any of the genes encoding enzymes and/or proteins of pantothenate biosynthetic pathway and overexpressing any of the genes encoding enzymes and/or proteins of methylenetetrahydrofolate (MTF) biosynthetic pathway in the recited microorganism will involve manipulating any of the numerous genes encoding any and all enzymes and/or proteins of associated with any of the entire metabolic pathways in these organisms.

This would requires, for example, the knowledge of pantothenate biosynthetic genes including a ketopantoate hydroxymethyltransferase (panB), a ketopantoate reductase (panE), a pantothenate synthetase (panC) and an aspartate-α-decarboxylase (panD); isoleucine-valine (ilv) biosynthetic pathway genes (which includes any of ivlA, ivlB, ivlC and/or ivlD genes); MTF biosynthetic genes including glyA and serA many of which have not been discovered; further knowledge of genes regulating pantothenate kinase from any source or manipulating the kinase activity by deleting CoaA and down-regulating CoaX activity or wherein the pantothenate kinase activity is decreased by deleting CoaX and downregulating CoaA activity and associated protein and/or enzymes involved in regulation of these pathways, wherein the genes in question originate from any source and will involve undue experimentation given only the working example for a process for production of pantothenate comprising culturing a *Bacillus subtilis* host cell transformed with the plasmid pAN396 containing the glyA gene consisting of SEQ ID NO: 24 and the plasmid pAN824 containing the serA gene consisting of SEQ ID NO: 31. Mere

knowledge of the biochemical or metabolic pathways leading to the production a compound is not sufficient to over-express any of the genes associated with the pathway(s).

Thus, an undue amount of trial and error experimentation must be preformed where such experimentation involves searching and screening for any deregulation of any enzymes and/or proteins of the pantothenate biosynthetic pathway and MTF biosynthetic pathway including any genetic modification that increases or decreases the activity of the of the gene product of *gcv, sera, serC, serB, glyA, sul, fol mtrA, pag, panB* or *purR* derived from a microorganism of the genus *Bacillus, Corynebacterium, Lactobacillus, Lactococci,* or *Streptomyces*; and determining whether such deregulation in the recited microorganism results in an enhanced production of pantothenate compared to a wild-type microorganism. General teaching regarding screening and searching for the claimed invention is not guidance for making the claimed invention.

Therefore, in view of the overly broad scope of the claims, the specification's lack of specific guidance and prediction, the specification's lack of additional working examples, and the amount of experimentation required; it would require undue experimentation for a skilled artisan to make and use the claimed invention. Without sufficient guidance, the experimentation left to those skilled in the art is unnecessarily and improperly extensive and undue. See *In re Wands* (858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988).

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re*

Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 2-15, 23, 28, 31-33, and 50-65 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 7,291,489; and claims 1-34 of U.S. Patent No. 7,244,593. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are fully encompassed and anticipated by each of the claims of U.S. Patent Nos. 7,291,489 and 7,244,593, where the specifications of each of the stated patents fully describe, disclose, and provide support for the claims of the instant application.

6. Claims 2-15, 23, 28, 31-33, and 50-65 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-6, 11-26, 29-32, 35-40 of copending Application No. 11/879,143. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are fully encompassed and anticipated by claims 2-6, 11-26, 29-32, 35-40 copending Application No. 11/682,103, where the specification of copending Application No. 11/879,143 fully describe, disclose, and provide support for the claims of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

7. No claim is allowed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian L Fronda whose telephone number is (571)272-0929. The examiner can normally be reached Monday-Thursday and alternate Fridays between 9:00AM - 5:00PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571)272-0811. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christian L. Fronda/
Primary Examiner
Art Unit 1652